

Zicong Hong

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TL;DR

- Committed to **democratizing access to AI** by harnessing the combined potential of cloud, edge, and end computing nodes. The goal is to deliver AI services that are cost-effective, trustworthy, and equitable, enabling diverse users and applications to access advanced AI technologies.
- Authored and co-authored over **40** research papers in competitive venues, including **14** as First or Corresponding Author. My work has received **1931 citations**, achieving an h-index of **17**.
- Honored with the **Best Paper Runner-up Award** at the 49th International Conference on Parallel Processing as Co-First Author and recognized with 1 **ESI Highly Cited Paper**.

Academic Qualifications

The Hong Kong Polytechnic University

DOCTOR OF PHILOSOPHY IN COMPUTER SCIENCE WITH HKPFS

- Advisor: Prof. Song Guo

Hong Kong

09/2020 - 01/2025

University of Aizu

VISITING SCHOLAR

- Advisor: Prof. Peng Li

Japan

07/2024-08/2024

ETH Zürich

VISITING SCHOLAR

- Advisor: Prof. Roger Wattenhofer

Switzerland

04/2023-10/2023

Sun Yat-sen University

BACHELOR OF ENGINEERING IN SOFTWARE ENGINEERING

- Advisor: Prof. Wuhui Chen

China

09/2015-07/2020

Professional Experience

The Hong Kong University of Science and Technology

POSTDOCTORAL RESEARCH FELLOW

- Advisor: Prof. Song Guo

Hong Kong

02/2025 - Now

Conference Papers

- [ATC]** Yuzhou Huang, Yapeng Jiang, **Zicong Hong†**, Wuhui Chen, Bin Wang, Weixi Zhu, Yue Yu, Zibin Zheng (†mentor). “*Obscura: Concealing Recomputation Overhead in Training of Large Language Models with Bubble-filling Pipeline Transformation*”. the USENIX Annual Technical Conference, 2025.
- [ASPLOS]** Zhiyuan Fang, Yuegui Huang, **Zicong Hong†**, Yufeng Lyu, Wuhui Chen, Yue Yu, Fan Yu, Zibin Zheng (†mentor). “*Klotski: Efficient Mixture-of-Expert Inference via Expert-Aware Multi-Batch Pipeline*”. the ACM International Conference on Architectural Support for Programming Languages and Operating Systems, 2025.
- [MOBICOM]** Haodong Wang, Qihua Zhou, **Zicong Hong#**, Song Guo (#corresponding author). “*D²MoE: Dual Routing and Dynamic Scheduling for Efficient On-Device MoE-based LLM Serving*”. Annual International Conference On Mobile Computing And Networking, 2025.
- [INFOCOM]** Qianli Liu, **Zicong Hong#**, Peng Li, Fahao Chen, Song Guo (#corresponding author). “*Mell: Memory-Efficient Large Language Model Serving via Multi-GPU KV Cache Management*”. IEEE International Conference on Computer Communications, 2025.

- C5. **[EUROSYS] Zicong Hong***, Jian Lin*, Song Guo, Sifu Luo, Wuhui Chen, Roger Wattenhofer, Yue Yu (*The first two authors have equal contribution). “*Optimus: Warming Serverless ML Inference via Inter-Function Model Transformation*”. European Conference on Computer Systems, 2024.
- C6. **[INFOCOM]** Jinyu Chen, Wenchao Xu, **Zicong Hong#**, Song Guo, Haozhao Wang, Jie Zhang Deze Zeng (#corresponding author). “*OTAS: An Elastic Transformer Serving System via Token Adaptation*”. IEEE International Conference on Computer Communications, 2024.
- C7. **[WWW]** Enyuan Zhou, Song Guo, Zhixiu Ma, **Zicong Hong#**, Tao Guo, Peiran Dong (#corresponding author). “*Poisoning Attack on Federated Knowledge Graph Embedding*”. The Web Conference, 2024.
- C8. **[VLDB] Zicong Hong**, Song Guo, Enyuan Zhou, Wuhui Chen, Huawei Huang, Albert Zomaya. “*GriDB: Scaling Blockchain Database via Sharding & Off-Chain Cross-Shard Mechanism*”. International Conference on Very Large Data Bases, 2023.
- C9. **[INFOCOM] Zicong Hong**, Song Guo, Enyuan Zhou, Jianting Zhang, Wuhui Chen, Jinwen Liang, Jie Zhang, Albert Zomaya. “*Prophet: Conflict-Free Sharding Blockchain via Byzantine-Tolerant Deterministic Ordering*”. IEEE International Conference on Computer Communications, 2023.
- C10. **[DSN] Zicong Hong**, Song Guo, Rui Zhang, Peng Li, Yufeng Zhan, Wuhui Chen. “*CYCLE: Sustainable Off-Chain Payment Channel Network with Asynchronous Rebalancing*”. IEEE/IFIP International Conference on Dependable Systems and Networks, 2022.
- C11. **[INFOCOM] Zicong Hong**, Song Guo, Peng Li, Wuhui Chen. “*Pyramid: A Layered Sharding Blockchain System*”. IEEE International Conference on Computer Communications, 2021.
- C12. **[ICPP] Jianting Zhang***, **Zicong Hong***, Yufen Zhan, Song Guo, Wuhui Chen (*The first two authors have equal contribution). “*SkyChain: A Deep Reinforcement Learning-Empowered Dynamic Sharding Blockchain System*”. International Conference on Parallel Processing (**Best paper runner-up prize**), 2020.
- C13. **[VLDB]** Enyuan Zhou, Song Guo, **Zicong Hong**, Christian S Jensen, Yang Xiao, Dalin Zhang, Jinwen Liang, Qingqi Pei. “*VeriDKG: A Verifiable SPARQL Query Engine for Decentralized Knowledge Graphs*”. International Conference on Very Large Data Bases, 2024.
- C14. **[NDSS]** Jianting Zhang, Wuhui Chen, Sifu Luo, Tiantian Gong, **Zicong Hong**, Aniket Kate. “*Front-running Attack in Distributed Sharded Ledgers and Fair Cross-shard Consensus*”. Network & Distributed System Security Symposium, 2024.
- C15. **[NIPS]** Peiran Dong, Bingjie Wang, Song Guo, Junxiao Wang, Jie Zhang, **Zicong Hong**, Xiao-Ming Wu. “*Towards Safe Concept Transfer of Multi-Modal Diffusion via Causal Representation Editing*”. NeurIPS, 2024.
- C16. **[ICDE]** Wuhui Chen, Ding Xia, Zhongteng Cai, Hong-Ning Dai, Jianting Zhang, **Zicong Hong**, Junyuan Liang, Zibin Zheng. “*Porygon: Scaling Blockchain via 3D Parallelism*”. The IEEE International Conference on Data Engineering, 2024.
- C17. **[ICML]** Jie Zhang, Xiaosong Ma, Song Guo, Peng Li, Wenchao Xu, Xueyang Tang, **Zicong Hong**. “*Amend to Alignment: Decoupled Prompt Tuning for Mitigating Spurious Correlation in Vision-Language Models*”. International Conference on Machine Learning, 2024.
- C18. **[SoCC]** Wuhui Chen, Xiaoyu Qiu, **Zicong Hong**, Zibin Zheng, Hong-Ning Dai, Jianting Zhang. “*Proactive Look-Ahead Control of Transaction Flows for High-Throughput Payment Channel Network*”. ACM Symposium on Cloud Computing, 2022.
- C19. **[ICDCS]** Leijie Wu, Song Guo, Yi Liu, **Zicong Hong**, Yufen Zhan, Wenchao Xu. “*Sustainable Federated Learning with Long-term Online VCG Auction Mechanism*”. International Conference on Distributed Computing Systems, 2022.
- C20. **[ICDCS]** Yi Liu, Leijie Wu, Yufeng Zhan, Song Guo, **Zicong Hong**. “*Incentive-Driven Long-term Optimization for Edge Learning by Hierarchical Reinforcement Mechanism*”. International Conference on Distributed Computing Systems, 2021.
- C21. **[WCNCW]** Zhen Zhang, Qingqing Li, Wuhui Chen, **Zicong Hong**. “*Distributed resource allocation for NOMA-based mobile edge computing with content caching*”. IEEE Wireless Communications & Networking Conf. Workshops, 2021.
- C22. **[WOWMOM]** Hui Lin, Zetao Yang, **Zicong Hong**, Shenghui Li, Wuhui Chen. “*Smart contract-based hierarchical auction mechanism for edge computing in blockchain-empowered IoT*”. IEEE 21st International Symposium on A World of Wireless, Mobile and Multimedia Networks, 2020.

Journal Papers

- J1. **[TON]** Fahao Chen, Peng Li, **Zicong Hong**, Zhou Su, Song Guo. “*Communication-Efficient Sparsely-Activated Model Training via Sequence Migration and Token Condensation*”. IEEE Trans. on Networking, 2025.

- J2. [TDSC] Jinwen Liang, Song Guo, **Zicong Hong**#, Enyuan Zhou, Chuan Zhang, Bin Xiao (#corresponding author). “SecPQ: Secure Prediction Queries on Encrypted Outsourced Databases”. IEEE Trans. on Dependable & Secure Computing, 2025.
- J3. [TPDS] Junyuan Liang, Wuhui Chen, **Zicong Hong**#, Haogang Zhu, Wangjie Qiu, Zibin Zheng (#corresponding author). “MoltDB: Accelerating Blockchain via Ancient State Segregation”. IEEE Trans. on Parallel & Distributed Systems, 2024.
- J4. [NETWORK] **Zicong Hong**, Xiaoyu Qiu, Jian Lin, Wuhui Chen, Yue Yu, Hui Wang, Song Guo, Wen Gao. “Intelligence-Endogenous Management Platform for Computing and Network Convergence”. IEEE Network, 2023.
- J5. [JSAC] **Zicong Hong**, Song Guo, Peng Li. “Scaling Blockchain via Layered Sharding”. IEEE Journal on Selected Areas in Communications, 2022.
- J6. [TPDS] **Zicong Hong**, Wuhui Chen, Huawei Huang, Song Guo, Zibin Zheng. “Multi-hop Cooperative Computation Offloading for Industrial IoT-Edge-Cloud Computing Environments”. IEEE Trans. on Parallel & Distributed Systems, 2019.
- J7. [TVT] **Zicong Hong**, Huawei Huang, Song Guo, Wuhui Chen, Zibin Zheng. “QoS-Aware Cooperative Computation Offloading for Robot Swarms in Cloud Robotics”. IEEE Transactions on Vehicular Technology, 2019.
- J8. [TC] Yi Liu, Song Guo, Jie Zhang, **Zicong Hong**, Yufeng Zhan, Qihua Zhou. “Collaborative Neural Architecture Search for Personalized Federated Learning”. IEEE Transactions on Computers, 2024.
- J9. [ASE] Ruifeng Ma, Yufeng Zhan, Chuge Wu, **Zicong Hong**, Yasir Ali, Yuanqing Xia. “Qora: Neural-Enhanced Interference-Aware Resource Provisioning for Serverless Computing”. IEEE Transactions on Automation Science & Engineering, 2025.
- J10. [OJCS] Jiahang Zhou, Yanyu Chen, **Zicong Hong**, Wuhui Chen, Yue Yu, Tao Zhang, Hui Wang, Chuanfu Zhang, Zibin Zheng. “Training and Serving System of Foundation Models: A Comprehensive Survey”. IEEE Open Journal of the Computer Society, 2024.
- J11. [TPDS] Junyuan Liang, Peiyuan Yao, Wuhui Chen, **Zicong Hong**, Jianting Zhang, Ting Cai, Min Sun, Zibin Zheng. “SPARROW: Expediting Smart Contract Execution for Blockchain Sharding via Inter-shard Caching”. IEEE Transactions on Parallel and Distributed Systems, 2024.
- J12. [TC] Jianting Zhang, Wuhui Chen, **Zicong Hong**, Gang Xiao, Linlin Du, Zibin Zheng. “Efficient Execution of Arbitrarily Complex Cross-shard Contracts for Blockchain Sharding”. IEEE Transactions on Computers, 2024.
- J13. [TMC] Yi Liu, Song Guo, Yufeng Zhan, Leijie Wu, **Zicong Hong**, Qihua Zhou. “Chiron: A Robustness-Aware Incentive Scheme for Edge Learning Via Hierarchical Reinforcement Learning”. IEEE Transactions on Mobile Computing, 2024.
- J14. [TMC] Jie Zhang, Song Guo, Xiaosong Ma, Wenchao Xu, Qihua Zhou, Jingcai Guo, **Zicong Hong**, Jun Shan. “Model Decomposition and Reassembly for Purified Knowledge Transfer in Personalized Federated Learning”. IEEE Transactions on Mobile Computing, 2024.
- J15. [TMC] Jing Li, Song Guo, Weifa Liang, Jianping Wang, Quan Chen, **Zicong Hong**, Zichuan Xu, Wenzheng Xu, Bin Xiao. “Aol-aware service provisioning in edge computing for digital twin network slicing requests”. IEEE Transactions on Mobile Computing, 2024.
- J16. [TPDS] Zhongteng Cai, Junyuan Liang, Wuhui Chen, **Zicong Hong**, Jianting Zhang, Hong-Ning Dai, Zibin Zheng. “Benzene: Scaling Blockchain with Cooperation-Based Sharding”. IEEE Transactions on Parallel and Distributed Systems, 2023.
- J17. [TKDE] Enyuan Zhou, **Zicong Hong**, Yang Xiao, Dongxiao Zhao, Qingqi Pei, Song Guo, Rajendra Akerkar. “MSTDB: A Hybrid Storage-empowered Scalable Semantic Blockchain Database”. IEEE Transactions on Knowledge & Data Engineering, 2023.
- J18. [TMC] Leijie Wu, Song Guo, **Zicong Hong**, Yi Liu, Wenchao Xu, Yufeng Zhan. “Long-Term Adaptive VCG Auction Mechanism for Sustainable Federated Learning With Periodical Client Shifting”. IEEE Transactions on Mobile Computing, 2023.
- J19. [NETWORK] Leijie Wu, Song Guo, Junxiao Wang, **Zicong Hong**, Jie Zhang, Yaohong Ding, “Federated Unlearning: Guarantee the Right of Clients to Forget”. IEEE Network, 2022.
- J20. [TSC] Ting Cai, **Zicong Hong**, Shuo Liu, Wuhui Chen, Zibin Zheng, Yang Yu. “SocialChain: Decoupling Social Data and Applications to Return Your Data Ownership”. IEEE Transactions on Services Computing, 2021.
- J21. [TETC] Yufeng Zhan, Jie Zhang, **Zicong Hong**, Leijie Wu, Peng Li, Song Guo. “A Survey of Incentive Mechanism Design for Federated Learning”. IEEE Transactions on Emerging Topics in Computing, 2021.
- J22. [IOTJ] Weikun Zhang, **Zicong Hong**, Wuhui Chen. “Hierarchical Pricing Mechanism with Financial Stability for Decentralized Crowdsourcing: A Smart Contract Approach”. IEEE Internet of Things Journal, 2020.

- J23. [IOTJ] Zhen Zhang, **Zicong Hong**, Wuhui Chen, Zibin Zheng, Xu Chen. “Joint Computation Offloading and Coin Loaning for Blockchain-Empowered Mobile-Edge Computing”. IEEE Internet of Things Journal, 2019.
- J24. [TVT] Xiaoyu Qiu, Luobin Liu, Wuhui Chen, **Zicong Hong**, Zibin Zheng. “Online Deep Reinforcement Learning for Computation Offloading in Blockchain-Empowered Mobile Edge Computing”. IEEE Transactions on Vehicular Technology (**ESI highly cited paper**), 2019.
- J25. [IOTJ] Wuhui Chen, Zhen Zhang, **Zicong Hong**, Chuan Chen, Jiajing Wu, Sabita Maharjan, Zibin Zheng, Yan Zhang. “Cooperative and Distributed Computation Offloading for Blockchain-Empowered Industrial Internet of Things”. IEEE Internet of Things Journal, 2019.

Patents

- P1. Song Guo, **Zicong Hong**, Xin Xie. “A Method and System for Cross-Shard Transactions Commitment in a Sharded Blockchain”. Chinese Patent, ZL 2021 1 0063950.9.

Books/Chapters

- B1. **Zicong Hong**, Song Guo, Peng Li, and Wuhui Chen. “Layered Sharding on Open Blockchain”. Blockchain Scalability, Springer, 97-117.
- B2. Jianting Zhang, **Zicong Hong**, Xiaoyu Qiu, Yufeng Zhan, Song Guo, and Wuhui Chen “Dynamic sharding: a trade-off between security and scalability”. Blockchain Scalability, Springer, 193-221.
- B3. Hao Ren, Jinwen Liang, **Zicong Hong**, Enyuan Zhou, and Junbao Pan. “Application: Privacy, Security, Robustness and Trustworthiness in Edge AI”. Machine Learning on Commodity Tiny Devices, CRC Press, 161-186.

Awards, Fellowships, & Grants

- 2020-2024 **Hong Kong Ph.D. Fellowship (Top Fellowship in HK)**, Hong Kong Research Grants Council
- 2019 **Kwang-Hua Fellowship**, Kwang-Hua Educational Foundation
- 2024 **Best Presentation Award**, PolyU COMP 50th Anniversary Research Student Conference
- 2024 **Silver Medal**, Geneva Inventions Expo
- 2023 **The Most Appreciated Teaching Assistant Award**, The Hong Kong Polytechnic University
- 2023 **VTC2023-Fall Volunteer Service Award**, The IEEE Vehicular Technology Society
- 2022 **2nd Runner-Up Award in Huawei Global Developer Competition for APAC**, Huawei
- 2020 **Best Paper Runner-up Award**, the 49th International Conference on Parallel Processing
- 2020 **Canadian Mitacs Research Internship Scholarship**, China Scholarship Council
- 2020 **Outstanding Thesis Award**, Sun Yat-sen University
- 2018, 2019 **First Prize Scholarship**, Sun Yat-sen University

Teaching

- Spring'24 **Computer Systems Security**, Teaching Assistant
- Spring'23 **Emerging Topics in Fintech**, Teaching Assistant
- Fall'22 **Programming Fundamentals and Applications**, Teaching Assistant
- Spring'22 **Big Data Analytics**, Teaching Assistant
- Fall'21 **Programming Fundamentals**, Teaching Assistant
- Spring'21 **Big Data Analytics**, Teaching Assistant
- Fall'20 **Object-oriented Programming**, Teaching Assistant

Professional Activities

Reviewer for IEEE Transactions on Parallel and Distributed Systems, IEEE Transactions on Services Computing, IEEE Transactions on Computers, IEEE Journal on Selected Areas in Communications, IEEE Open Journal of the Computer Society,

IEEE Transactions on Industrial Informatics, IEEE Internet of Things Journal, IEEE Transactions on Vehicular Technology, and IEEE Transactions on Knowledge and Data Engineering